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ABSTRACT

A study involving 97 students (79 females and 18 males) at New York City Technical College was undertaken to determine the effectiveness of desensitization in reducing test anxiety and improving grade point averages (GPAs). The study compared the GPAs of students who completed workshops using the desensitization hierarchy developed by R. Strieby (1974) with those of control students. The study used J. Wine's (1971) theory that systematic desensitization should be effective in reducing test anxiety. In all, 42 students did and 55 students did not participate in the workshops. Test anxiety levels of all subjects were assessed by administration of the debilitating and facilitating scales of the Achievement Anxiety Test before and after a treatment period of 6 weeks. The achievement level was assessed for all subjects through the comparison of GPAs at the end of the semester. In addition, a Mann Whitney u test was used to evaluate the significance of the results. Results indicate that students participating in the workshops improved their academic averages more than did control students. The experimental group also reported less debilitating anxiety than did the control group, although there was no comparable finding for facilitating anxiety. Early screening of students to identify test anxiety and the use of desensitization workshops using counselors in college learning centers are recommended. Study instruments and instructions for subjects and a 37-item list of references are included. (TJH)

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THE EFFECTS OF SYSTEMATIC DESENSITIZATION
ON TEST-ANXIOUS STUDENTS IN AN URBAN
COMMUNITY COLLEGE

LEARNING THEORY AND APPLICATIONS

by

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Abstract

The purpose of this study was to determine the effectiveness of desensitization procedures in reducing test anxiety and improving grade point averages (GPA) of test anxious students at New York City Technical College. The goal was to compare the academic achievement of the volunteer students that completed workshops using Strieby's (1974) desensitization hierarchy with similar students who did not participate in these workshops. Based on Wine's (1971) theory that systematic desensitization should be effective in reducing the debilitating effects of test anxiety, it was hypothesized that the students who participated in these workshops would show significantly higher GPAs at the end of the treatment period than the students who did not participate. The 97 subjects in this study were drawn from two categories of students: (1) volunteers for treatment that participated in the workshops (35 females and 7 males), and (2) volunteers for treatment that did not participate (44 females and 11 males). The test anxiety levels of all subjects were assessed by administration of the debilitating and facilitating scales of the Alpert and Haber's (1960) Achievement Anxiety Test (AAT) before and after a treatment period of six weeks. The achievement level was assessed for all subjects through the comparison of GPAs at the end of the semester. In

addition, a Mann Whitney u test was utilized to further validate the significance of the results. The results indicated that students who received treatment improved their academic averages more than students who did not. Mann Whitney u test, $z=2.09$, $p<.05$. Following treatment, the experimental group reported less debilitating anxiety than the control group as measured by the Alpert-Haber Test Anxiety Questionnaire, $t=1.67$, $p<.05$, one tailed test. There was no comparable finding for facilitating anxiety, $t=.31$ $p<.05$. Recommendations include early screening of students to identify test anxiety problems and the proliferation of systematic desensitization workshops utilizing counselors in the college learning centers.

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INTRODUCTION

This study was aimed at determining the effectiveness of desensitization procedures developed by Wolpe (1966) in reducing test anxiety and improving grade point averages (GPA) of test-anxious students at New York City Technical College.

According to the Office of Institutional Research at the college (1980), a study of the college students' high school grade point averages indicated that only fifteen percent achieved an average in the range of 85 to 100. Twenty one percent ranged between 70 to 79 and the other twenty three percent fell below 70. These findings indicate that a large number of students experience particular difficulty in English, reading, writing and mathematics before entering college. They bring with them patterns of failure, for example, poor self concepts and lack of confidence, which affect their performances while pursuing their education. According to Allen (1972), new college students encounter an overwhelming variety of adjustment problems to college life. This is especially evident in the urban community students who are new and often academically unprepared for college work and testing. Bronzaft (1968) and Bronzaft and Epstein (1973) demonstrated that test anxiety plays a greater role for students from those lower social economic groups who increasingly comprise a major portion of new college entrants.

BACKGROUND AND SIGNIFICANCE

New York City Technical College is an urban community college and is one of the largest public two-year colleges in New York State. The college offers over 35 different curriculum choices leading to an Associate in Arts, an Associate in Science or an Associate in Applied Science degree. the curricula are offered among four divisions within the college: Commerce, Engineering Technology, Allied Health and Liberal Arts. Its enrollment reflects the community with 70 percent of the student body classified as members of a minority group. The college population is 55 percent male and 45 percent female.

The educational and family backgrounds of NYCTC students indicate that many students need extensive college orientation, study skills development and educational/career counseling along with basic skills remediation. Many NYCTC students are often the first generation in their families to attend college. The sample group in this study had a similar demographic make-up in terms of minority group status.

The educational opportunities offered students at NYCTC may also be impaired by their anxieties deriving from prior negative experiences in evaluative situations. The academic requirements of the college may further contribute to the students' anxieties. A GPA of at least 2.00 on a 4 . point scale is important for these students to graduate and/or continue at senior colleges. The importance of this study, in keeping with the practicum requirements of The Learning

Theory and Applications Seminar of Nova University, was the possibility of effectively addressing a situation important to the educational processes of this institution. This study was designed to provide a basis for improving academic performances among students who feel uncomfortable in the traditional competitive classroom situation and experience debilitating anxiety while taking tests. It is an outgrowth of three basic concepts introduced in the seminar concerning the learning principles of behaviorism and humanistic education: behavior modification, reinforcement and the idea of the self as a unifying theme.

While discussing behaviorism and the concept of extinction in class, it appeared to the writer that Thorndike's (1913) "law of effects," which holds that behavior in the maladjusted person is characterized by learned faulty coping patterns which are maintained by positive or negative reinforcement might have significant implications for counseling students. Since such patterns tend to disappear over time if they are not reinforced, it was conjectured that the learning of new "coping patterns" in test-taking situations would have positive reinforcing effects on students at the college who experience debilitating test anxiety. The utilization of systematic desensitization for treating test anxious students appeared feasible because it was specifically designed by Wolpe (1961) as a technique for extinguishing negatively reinforced behavior through eliciting an antagonistic or competing response. On the assumption that

debilitating anxiety is "learned" and that it is difficult to feel both relaxed and anxious at the same time, Wolpe attempted to train his subjects to remain calm and relaxed in situations that formerly produced anxiety.

Similarly, the writer was greatly influenced by the concept of the self as a unifying theme which the humanistic model projects as a means of accounting for an individual's subjective experiences. According to Rogers (1961) the individual reacts to situations in terms of the way he perceives them, in ways consistent with his self concept and view of the world. Consideration of this premise led to the assumption that improved academic performances resulting from lowered levels of anxiety acquired through volunteer treatment in systematic desensitization would have positive reinforcing effects on the student's self concept. It was further hypothesized that an improved self confidence in approaching college work would enhance the learning experience for many who feel themselves "intrinsically" unable to earn their degree. This investigation therefore was considered to be worthwhile because it sought to provide a support service aimed at helping to change the negative attitudes toward education that many students bring with them to college.

Finally it was hoped that by helping to relieve the trauma of failure which is a cause of college drop outs, systematic desensitization procedures would be accepted as part of the educational process important to the institution

as an effective approach to promote student progress in the skills necessary to succeed in college.

LITERATURE REVIEW

During the past there have been many conceptions concerning the relationships of anxiety to performance. In 1968, Yerkes and Dodson suggested that the relationship between arousal and performance was in the form of an inverted u shaped curve. When arousal was extremely high, stimulation became excessive and performance deteriorated because the individual became overwhelmed and disorganized. Conversely, low arousal also caused poor performance because the individual was unmotivated. They concluded that performance was of highest quality when anxiety or arousal was at a moderate level.

From a different viewpoint Spence and Spence (1964) theorized that anxiety was a drive and high anxiety should lead to greater performance output. Despite noting that highly anxious people (on self report measures) tended to learn simple conditioned responses faster than those with low anxiety, they observed that when the learning task became more complex, adequate learning required correct discriminations from among a number of competing responses. This slowed down the learning process as well as increased the chances that enhanced drive reinforced the strength of the wrong or right responses. Consequently, highly anxious (high drive)

subjects would not learn as effectively in complex situations.

In a similar vein Wine (1971) contended that the highly anxious subject was internally focused on self-evaluative, self-deprecatory thinking and attention to his tense autonomic responses. Since this distracted his attention from the tasks he had to grapple with, which, in most cases, required full attention for adequate performance, he could not perform adequately because his attention was divided between internal and task cues.

Another variable introduced by related research purported to interact with test anxiety in influencing classroom performance was social class. Suinn (1965) used this concept to explain different levels of correlation of performance with test anxiety found in different studies. The range of the correlation of GPA has ranged from zero (Sarason and Mandler, and Grooms and Endler, 1960) to as high as $-.50$ (Dember, Nairne and Miller, 1962). The different nature of the student bodies in terms of selectivity was used to explain the differences.

Bronzaft (1968) and Bronzaft and Epstein (1973) demonstrated that test anxiety played a greater role for students from lower social economic groups. In testing socially stable vs socially mobile students at three New York City colleges they found at two of the colleges, the socially mobile students showed a higher inverse correlation with an intelligence test measure than the socially stable.

In another study Bronzaft and Epstein (1973) compared the test anxiety levels measured by the Achievement Anxiety Test (AAT) of City University of New York (CUNY) students before and after the inception of open admissions. Because of the new CUNY policy, the mean socio-economic and academic level had been reduced. They reported that following the inception of open admissions the mean facilitating anxiety level had gone up. By contrast, Peterson (1972) measured test anxiety levels in three midwestern colleges in 1962/63 and again in 1968/69 and found no change in test anxiety level.

Another approach to explaining the facilitation and debilitating aspects of test anxiety is to postulate that two types of anxiety co-exist. An early hypothesis of Sarason, Mandler and Craighill (1952) considered test anxiety to be unidimensional and always debilitating. However, Alpert and Haber (1960) later postulated that there are facilitating and debilitating anxiety drives in every individual. As mentioned above, the AAT was used to measure both types of anxiety. They found the first type of anxiety correlated positively with performance and the latter inversely. This view of test anxiety has since been the accepted view, even by Sarason, Mandler and Craighill.

In sum, the literature indicated that the relation of anxiety to performance varies with different tasks. Moreover, there are different types of anxieties relating to performance on the same tasks in different ways. These studies implied

that test anxiety does interface with performance particularly where complex thinking is required. The college situation which mandates such thinking on the part of students can be viewed as a source of considerable test anxiety for students. Students from minority and lower socio-economic backgrounds appear to be especially vulnerable to the debilitating effects of anxiety. Allen (1972) found that in most instances their poor self-concepts and basic skills deficiencies in English, reading, writing and mathematics are usually characterized by a lack of self-confidence leading to high levels of anxiety and poor academic performance.

The Use of Systematic Desensitization for Test Anxiety

As mentioned earlier the term systematic desensitization has been applied to a specific approach developed by Wolpe (1958) (1961) (1963) (1969). The method of desensitization was aimed at teaching the subjects to emit responses inconsistent with anxiety producing stimuli. According to Wolpe (1966) and Strieby (1974), hierarchy construction is very important to the desensitization process. The anxiety hierarchy is a list of related stimuli ranked in descending order according to the amount of anxiety they evoke in the client.

The traditional method of treatment of test anxiety has involved either individual counseling (Kirk, 1962) or group (Chestnut, 1965). These treatments focused on ameliorating student study skills or dealing with the underlying per-

sonality dynamics of underachievement. However, these methods were found to be unsuccessful in facilitating the academic achievement of students with test anxiety problems (Chestnut, 1965). On the other hand, the wide success of behavioral techniques in other areas led to the application of Wolpe's (1958) systematic desensitization techniques in the treatment of this problem (Paul, 1964). This approach centered on combining instruction in deep muscle relaxation with desensitization to an anxiety hierarchy. Only eight or nine one-hour sessions were required for treatment. Hierarchy construction was individual and treatment was administered on an individual basis. Although the overall treatment program may take a number of weeks or even months, Kennedy and Kimura (1974) have shown that even patients who progressed only 25 to 50 percent of the way through their anxiety hierarchy showed significant therapeutic gains as evidenced by a marked reduction in specific avoidance behaviors when compared with their pretreatment levels. Wolpe (1969) identified three types of problems that may contraindicate desensitization training in certain cases: (a) difficulties in relaxation, (b) misleading or irrelevant hierarchies, and (c) inadequacies of imagery. Desensitization procedures have, however, been used successfully in dealing with a wide range of maladaptive behaviors, including examination anxieties, phobias, anxiety neurosis, and certain cases of impotence and frigidity.

In an attempt to establish the relative effectiveness

of the desensitization technique, Crighton and Jehu (1969) compared treatment for test anxiety by systematic desensitization with treatment by traditional study-counseling and psychotherapy. Both treatments were found to be equally effective in reducing inventory measured anxiety as well as improving performance on an examination.

Suinn (1968) compared individual and group administration of the desensitization hierarchy. The treatment method was the same for both categories with the standard systematic desensitization procedure being applied. The only variation was that for half the students, treatment was administered while alone with the therapist, and the other half together as a group. He reported that treatment was proven to be equally effective for both the individual and group categories showing reduction in inventory measured test anxiety, implying that a great deal of therapist contact time could be saved by treatment in groups.

Cohen (1969) also reported equal reduction in inventory measured anxiety and improvement in GPA by comparing the use of a graded hierarchy (one which proceeds from least anxiety to most anxiety provoking) to a non-graded series of hierarchy items. This study also implied that individually constructed test anxiety hierarchies were not necessary for desensitization.

In the interest of further simplifying the process and decreasing therapist contact time, Donner and Guernsey (1969) used tape recorded instructions in systematic desen-

sitization. In this study, which was designed to determine if the therapist could be eliminated, they compared two treatments of test anxiety; one with the therapist present administering the hierarchy, the other automated without a therapist present. They found both treatments reduced inventory measured test anxiety as well as improved GPA. Although there was no significant statistical difference between the groups, the trend of the data was in favor of the therapist-present category.

Prochaska (1971) also found the utilization of tape recorded instruction to be effective in improving GPA in an experiment which compared two types of hierarchies. Allen (1971) compared systematic desensitization with study counseling and with a combination technique utilizing both study counseling and systematic desensitization. He found them all to be effective in improving GPA and reducing anxiety. However, he was unable to detect an advantage of the combined approach over desensitization alone.

Although these studies have shown that a number of factors enter into the potential effectiveness of a desensitization procedure, little mention was made of the hierarchy construction procedures or of the population for which they were geared. This points out a need for such information to assess the use of a standardized hierarchy in populations other than the one used in the present study. One major attempt to build a relevant hierarchy was undertaken by Strieby (1974). Based on in-depth interviews with

urban community college students in New York City, he constructed a hierarchy of twenty-five items, followed by inventory testing of relevant interview items. He followed up these interviews with independent content analysis and a rating of final hierarchy position by a large sample of students. Although Strieby did not present any pre to post-change data, the validity and reliability of these measures have been demonstrated by Staurt and Bronzaft (1970).

Evaluation of Systematic Desensitization Treatment of Test Anxiety

Despite an abundant supply of materials to measure test anxiety, i.e., GPA, Test Anxiety Questionnaire (TAQ) Hayes (1958), The Test Anxiety Scale (TAS) Saranson (1958) and the Achievement Anxiety Test (AAT) Alpert and Haber (1960), there have been problems in assessment of modification programs. The problems in evaluation have been in the area of experimental design. Paul (1969) has characterized the major threats to the internal validity of an experiment as errors falling into the therapist client time, and measurement criteria domain. A confound within any of these areas limits the strength of the assumption of a cause-effect relation between the treatment and outcome variables.

Lack of adequate control data was one of the most serious shortcomings of the studies mentioned in the previous section. For example, Cohen (1969), Crighton and Jehu (1970) and Suinn (1965) used inadequate controls since comparisons

were made between volunteer and non-volunteer control subjects. This was an important difference since Allen (1971) found that volunteers were significantly more anxious and motivated than non-volunteers.

The use of a control group was also important for another reason. Suinn (1969) discovered that some improvement in measured test anxiety (by the TAS) occurred without treatment. Thus a control group was necessary to identify any important effect which might have occurred without treatment.

Another serious problem has been the issue of therapist specificity. Although the studies by Donner and Guernsey (1960), Cohen (1969), Freeling and Shemberg (1970), Mitchell and Ingham (1970), Prochaska (1971) and McManus (1971) used only one therapist, Morris and Suckerman (1974a, 1974b) pointed out that the therapist can have a strong effect on the outcome of a behavior therapy program even of the automated type. This factor can be controlled by using several therapists/counselors with the same procedure.

On the question of generalizability, little information has been reported in the literature concerning the background of those treated. In only two of the prior mentioned studies, Allen (1971) and Cohen (1969), were the differences between the subject sample which volunteered and those who did not specified. It is important for considerations of generalizability to know the difference, if any, in anxiety level of those that volunteer.

Another noticeable problem is the dearth of longitudinal studies of the effects of a test anxiety behavior modification program. The need for such research is best demonstrated by a study by Donner (1970) which was a one semester follow-up of the previously mentioned Donner and Guerney (1969) study. In that study it was found that no significant difference was observable between therapist-present and therapist-absent automated desensitization. The data, however, indicated a trend favoring the therapist-present condition. In the follow up study this trend became statistically significant with the therapist-present condition showing more improvement on GPA than the therapist-absent condition.

Allen and Desaulniers (1974) found that the initial differences observed by Allen (1971) between treatment and control on inventory measured test anxiety and GPA were negligible after a two year period. The differences were maintained for only one semester following treatment. On the other hand, Paul (1967, 1968) reported that students treated by individual and group desensitization maintained after two years post-treatment academic gains and reduction in self-reported anxiety when contrasted with students exposed to counseling and placebo procedures or no treatment.

This review of the problems encountered in evaluating behavioral treatments of test anxiety indicates that much has been lacking in the designing of studies. Studies have been conducted which lacked adequate control data requisite

towards making meaningful comparisons between volunteer and non-volunteer subjects. Incorporated in such reports should be information regarding the nature of the population being studied along with the comparability of the control group in anxiety, GPA and motivation. Additionally, although there are indications that the therapist/counselor role provides strong implications for treatment outcome, the issue of therapist/counselor specificity has yet to be resolved. Lastly, longitudinal studies which are most lacking are critically needed and must be conducted before valid conclusions can be formulated as to the effect of a treatment.

SUMMARY

The studies reviewed indicate that the relation of anxiety to performance has both facilitating and debilitating effects. Complexity of the task appeared to be most prominent among those factors which cause anxiety to have a debilitating effect. The college test situation, a noticeably clear example of a complex task, appeared to be consistently conducive to creating the debilitating effects of anxiety in students. The relations of these effects to college performance appeared to commingle with social class factors. Those in minority and lower socio-economic groups were found to have lower facilitating and higher debilitating levels of anxiety.

Treatment of test anxiety by traditional psychotherapy methods did not prove to be effective in improving academic

performance. Systematic desensitization developed by Wolpe (1958) for treatment of phobias was developed as an alternate technique for the treatment of test anxiety. Subsequent research demonstrated that the treatment method could be simplified by standardized group hierarchies, group administration, and automated administration. Little research was, however, done in the area of population-relevant hierarchies which Wolpe (1966) deemed critical to the effectiveness of a desensitization program.

An example of a relevant hierarchy is Strieby's (1974) development of a hierarchy for use with urban community college students in New York City (Appendix A). However, no pre to post evaluation data is available for this hierarchy.

In general, the research designs used in evaluating the desensitization treatments of test anxiety have been weak. Although several valid test anxiety inventories were available, the design of many of the desensitization studies utilizing these inventories was lacking. Control groups were often not used or, when used, were not equivalent in terms of motivation. In some studies, there was only one therapist and the validity of the study was threatened by therapist specificity. Most lacking were longitudinal studies of the effects of desensitization to test anxiety on performance. The three longitudinal studies which had been conducted, and have had varied findings, demonstrated the importance of such research and the necessity for more longitudinal studies.

PROCEDURES

It was hypothesized that test anxious students at New York City Technical College who experience debilitating anxiety in test taking situations would, following treatment in systematic desensitization, register higher GPAs than students with similar anxiety problems who did not receive the treatment. Through the use of posters describing the service and the assistance of teachers, counselors, and other students in making referrals, 97 volunteer students were solicited whose Alpert-Haber test responses indicated they experienced high levels of anxiety while taking tests. As part of the registration procedure, each student was interviewed separately and given a packet containing a registration blank (Appendix B), and an Alpert-Haber Achievement Anxiety Test (1960) (AAT) (Appendix C) which they were required to complete at home. The students were assured that their responses would be treated in confidence. The completed papers were then sealed in an envelope and returned to the investigator. Forty two of the ninety seven students who registered in the fall, 82 semester were assigned to a desensitization workshop which met twelve times for one hour sessions twice a week covering a period of six weeks. The workshops were initially planned to be presented three times weekly but students' class attendance requirements did not allow for this. Those students who could attend

(35 females and 7 males) formed the experimental group. The remaining fifty five students (44 females and 11 males) formed the control group. All of the participants were full-time students who were pursuing degrees in Liberal Arts, Electrical, Mechanical, Data Processing, Civil Engineering, Secretarial Science, and Pre-Nursing curriculums at the college. Since absolute random assignment to groups was not possible, it was determined important to establish the equivalence of the experimental and control groups. Accordingly, subjects were compared on credits attempted and earned during both the pre-treatment and treatment semesters. There was no significant difference between the two groups.

Two counselors on the staff of the Search for Education, Elevation and Knowledge (SEEK) program, the researcher and a volunteer, facilitated the workshops in a faculty lounge reserved for this purpose. The SEEK program, which was funded by the federal government in 1966 to help students from poor neighborhoods remedy deficiencies in academic skills and attitudes requisite for regular admission to the City University four year colleges, evolved at the college from what was originally a College Discovery program funded by New York City. By signing legislation on July 2, 1980 redesignating New York City Community College as New York City Technical College, the governor of New York underscored an agreement that in the future, fiscal responsibility for the college including the newly named SEEK program would be assumed by the State of New York instead of the City under the prior community

colleges formula which was divided equally between both City and State.

Concomittant with the utilization of two counselors from the SEEK program to conduct the workshops, this study was also made possible through the invaluable assistance of the program's advisor, a psychologist with prior experience in desensitization techniques. A large portion of the treatment was administered by cassette-tape recordings of the Strieby (1974) muscle relaxation and desensitization techniques. These were recorded by the psychologist and loaned to the experimenter for the purpose of this investigation. By the end of the treatment period, each counselor had conducted 12 sessions with groups which ranged in size from four to twelve participants.

The role of the counselors in both groups were identical. Using a client-centered approach at the beginning of and during the final ten minutes of each meeting, the counselors would prompt individual members to discuss in group any anxiety problems they encountered during their classroom exams and how well they were succeeding in applying the relaxation instructions heard on the tape. Throughout all meetings the focus of the counselors was to stress the importance of complete concentration during the group and subsequent practice sessions at home, as a means wherby each student could learn to command the desired "coping" response when needed in the dreaded test-taking situation. Additionally, the counselors would send reminder letters or make follow-up phone calls to alert each participant to up-coming meetings or to discuss absences where

indicated.

The measure of test anxiety used in this study was Alpert and Haber's (1960) Achievement Anxiety Test (AAT) (Appendix D). The AAT is a nineteen Likert-type item test with two separate scales. Facilitating test anxiety (F, 9 items) and Debilitating test anxiety (D, 10 items). F scale items are of the prototype, "Nervousness while taking a test helps me to do better." D scale items are of the prototype, "Nervousness while taking an exam or test hinders me from doing well." Items from each scale are interspersed between each other. In order to control for an acquiescent response style, items are balanced for positive and negative wording.

An advantage of the AAT is that it gives scores on both facilitating and debilitating anxiety. This made it possible to observe the relationship of both of these types of test anxiety to academic performance. In an earlier study, Hudesman and Wiesner (1978) reported they found this useful in determining higher amounts of debilitating and facilitating anxiety in volunteer test anxious students than indicated by students from the general college population.

The first session (and tape) focused on muscle relaxation. The tape began with some introductory remarks about fear and anxiety. Students were then asked to lie down on mats and were given detailed tape instructions in muscle relaxation procedures, as reported by Wolpe and Lazarus (1966). Following each recording, a period of approximately 15 to 20 minutes was spent discussing indi-

vidual reactions to the exercises and problems experienced in achieving relaxation. At the end of the first workshop, each student was given a copy of the instructions heard on the tape (Appendix D) and told to practice relaxing at home 20 minutes daily until the next meeting. In subsequent sessions the first ten minutes were devoted to a review of the muscle relaxation exercises. This review was followed by four or five tape recorded items from the Strieby hierarchy of test anxiety. (Appendix A) Each item was repeated four times to deepen the concentration of the students while practicing on the mats. The procedures of presentation of each hierarchy item were same. The anxiety producing scene was slowly described on the tape. Participants were required to imagine different test taking situations, with eyes closed, and to notice their bodily sensations and reactions to these images. If they experienced any feelings of tension or anxiety during these moments, they were instructed to concentrate on the sections of their bodies which produced these feelings and relax them. When four or five scenes were visualized and attended to, the counselor would turn off the tape and encourage feedback from the group. At the end of each session, the participants were reminded to practice the relaxation exercises at home in the interest of acquiring quicker anxiety reduction responses when needed. The series of desensitization workshops were scheduled to end just as final exams were scheduled to begin.

To determine changes in the levels of anxiety reported on the pre-test, a post-test of the AAT was again

administered following the termination of the last session. In addition, the grades recorded for each student at the end of the semester were assessed to determine significant increases in grade point averages. Lastly, a Mann Whitney U test was used to compare the degree of change for both groups.

BASIC ASSUMPTIONS

1. It was assumed that test anxious students could improve their test-taking abilities through learning systematic desensitization techniques.
2. It was assumed that learning how to relax in test-taking situations would result in an improved self-confidence for students completing the workshops.
3. It was assumed that the presence of a counselor to discuss individual reactions in a group situation would have a reinforcing effect on attendance patterns and achievement motivation among participating students.
4. It was assumed that most of the participants possessed an innate ability to do college work.

LIMITATIONS

This study may be affected by the following limitations.

1. Because this study was conducted at only one college, the findings arrived at may not be generalizable to other colleges.
2. The use of volunteer subjects precluded the preferred

condition of random assignment. This may also have serious limitations for the generalizability of the findings to other populations.

3. The pre-test of the Alpert-Haber anxiety scale was not administered during a major testing period when students, theoretically, would be most aware of their feelings. This may have affected the validity of the interpretations made on pre- and post-measures.
4. It might be suggested that volunteer participants are most likely to show improvement because of high motivation. Thus, the conclusions drawn may be attributed to high motivation rather than to the treatment applied.

Results

This study hypothesized that volunteer students participating in workshops offering systematic desensitization as a treatment to reduce test anxiety would improve their G.P.A.s more than other volunteer students who did not participate during the treatment period. In order to establish the equivalence of the two groups, a series of analyses were performed comparing the groups during the pre-treatment and treatment semesters.

Table 1 shows the means of the number of credits attempted and completed for the experimental and control groups. No significant differences were found in credits attempted or completed for either the pre-treatment or treatment semester. However, it should be noted that while there was no significant difference at the level of $p > .05$, during the treatment semester, the experimental group completed more credits than did the control group at a level that very closely approximates significance in the expected direction.

Table 1

A Comparison of the Number of Credits Attempted and Completed for Experimental and Control Groups:
Pre-treatment and Treatment Term

	Experimental Group	Control Group		
	Mean	Mean	t value	(p)
Credits Attempted				
Pre-treatment Term	8.13	8.20	-0.07	$p > .05$
Treatment Term	9.63	8.80	+0.86	$p > .05$
Credits Completed				
Pre-treatment Term	5.97	7.01	-1.04	$p > .05$
Treatment Term	8.00	6.63	1.95	$p > .05$

Using the Alpert-Haber Test Anxiety Questionnaire, pre-and post-treatment scores were available for 65 students. Table 11 summarizes these scores. Mean pre-treatment debilitating anxiety scores were 35.1 and 35.3 for the experimental ($n = 49$) and control groups ($n = 16$) respectively, $t_{pre} = .11$, $p .05$. Mean post-treatment scores were 30.7 and 33.7 for the experimental and control groups respectively $t_{post} = 1.67$, $p \leq .05$ one-tailed test. This difference indicates that there was a downward shift in debilitating anxiety for the experimental group. There was no similar shift for facilitating anxiety where mean pre-scores for experimental and control groups were 20.5 and 20.0 $t = .34$, $p .05$ and mean post scores were 21.9 and 22.5 $t = .19$, $p .05$.

Table 11

A Comparison of Pre and Post Measures on the Alpert-Haber Test Anxiety Questionnaire for Experimental and Control Groups

	Experimental Group	Control Group		
	$n = 49$	$n = 16$	t value	(p)
Debilitating Anxiety				
Pre-condition	35.1	35.3	.11	p .05
Post-condition	30.7	33.7	1.67	p .05
Facilitating Anxiety				
Pre-condition	20.5	20.0	.34	p .05
Post-condition	21.9	22.5	.19	p .05

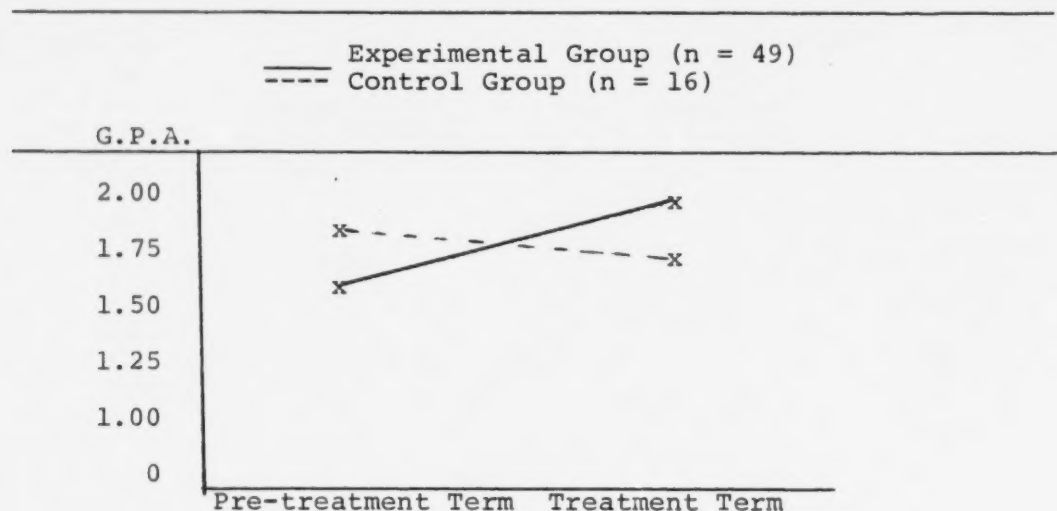
When the degree of change in G.P.A. was compared for

the two groups, a Mann Whitney u test indicated that the experimental students' grades increased significantly as compared to the control group. $z = 2.09$, $p .036$. (Mean ranks were 55.83 and 43.78 for the experimental and control groups respectively).

Table 111 shows the pre-treatment and treatment semester G.P.A.s of the two groups. The experimental group had a mean pre-treatment semester G.P.A. $\bar{x} = 1.523$ and a mean treatment semester G.P.A. of $\bar{x} = 1.872$. The control group had a mean pre-treatment G.P.A. of $\bar{x} = 1.821$ and a mean treatment semester of $\bar{x} = 1.547$. There was no difference in pre-treatment G.P.A.s for the two groups $t = 1.37$ $p .05$.

Table 111

A Comparison of Grade Point Averages for the Experimental and Control Groups: Pre-treatment and Treatment Semester



DISCUSSION, IMPLICATIONS and RECOMMENDATIONS

The results of this study support the hypothesis that test-anxious students can effectively improve their academic performance through volunteer treatment in systematic desensitization. Volunteer students who received treatment in systematic desensitization improved their GPAs more than the control group did at the end of the treatment semester. Concomittently, the experimental group also reported less debilitating anxiety than the control group as measured by the Alpert-Haber Test Anxiety scale. Clearly, behavioral changes manifested by the experimental group members provide implications of a counter-conditioning process which served to alleviate previously experienced habitual patterns of debilitating anxiety during test taking. This appears to support Guthrie's (1952) viewpoint that the elimination of a response can be achieved by eliciting a strong incompatible response in the presence of cues that ordinarily elicit the undesirable behavior, or Bandura's view that the neutralization of aversive stimuli results from the evocation of incompatible responses which are strong enough to supersede anxiety reactions to these stimuli (1969). To the extent that systematic desensitization involves counter-conditioning vis-a-vis the graded anxiety-provoking stimuli contained in the Strieby hierarchy, it seems reasonable to assume that the relaxation levels achieved by the participants proved incompatible with their anxiety reactions.

Still to be resolved, however, is some method of determining which aspects of the desensitization process—muscle relaxation, imagining aversive stimuli or group support—contributed most heavily to anxiety reduction. Many of the students who did not become involved in the group discussions and were inconsistent in their attendance nevertheless indicated improvement on their post test responses to the Alpert-Haber scale. Others who showed scant changes in their answers on both pre- and post-measures registered significant improvement in their GPAs. Since the AAT is designed to describe the individual's habitual way of reacting to testing situations, it is possible that for these students the treatment may indeed have been effective in changing their test taking behavior without changing the associated verbal behavior they habitually use when faced with the emotional reality "of having to take a test." According to Johnson and Sechrest (1968), for many college students verbal labeling may be better established than the subsequent actual referent behavior related to the testing experience since the desensitization treatment does not attempt to modify it directly. It is also conceivable that the presence of other group members with similar test anxiety problems may have provided beneficial reinforcing effects for many with previously held negative self concepts regarding their ability to do college work. In line with these considerations the findings indicate that training in deep muscle relaxation associated with systematic

desensitization can produce the beneficial effect of neutralizing anxiety-producing stimuli previously experienced as debilitating.

In evaluating the students responses to the Strieby hierarchy, which required them to imagine themselves in the feared test situation before concentrating on muscle relaxation, it can be argued that for some students the aversive stimuli in imaginal form was not strong enough to emulate the real testing situation. To control for accuracy of visualization, students were required to signal with the index finger when they experienced feelings of anxiety while visualizing the scenes described on the tapes. The observation that some students were inconsistent in their responses and did not always signal to a scene which they had previously identified as anxiety producing suggests the probability they experienced difficulty in this area. It is, therefore, cautioned by the experimenter, that in the interest of more accurate interpretations in similar studies in the future, extensive reliance on self report measures may prove less than satisfactory because of the manifest difficulty of determining the clarity of the imagined stimuli or the degree of relaxation achieved by the student.

It may be, however, that the process of systematic desensitization does not require total accuracy from the imaginal to the real-life situation in order for the treatment to be effective. Davison (1973) contends that even if a student could succeed in imagining the various anxiety items

without becoming anxious in practice, accurate visualization is unlikely to involve all the stimulus elements for the level of the hierarchy. Further, the hierarchy itself cannot possibly provide an exhaustive sampling of the population of fear elements a student may conjure up in the test situation. On the other hand, Kennedy and Kimura (1974) reported therapeutic gains in patients who had progressed only 25 to 50 percent of the way through their anxiety hierarchy. With this in mind, it appears convincing that in the present investigation students in the treatment group received varying beneficial effects from group support, deep muscle relaxation, or perhaps even adequate visualization which culminated in improved academic grades.

At the end of the training sessions, even though they had not yet completed their final exams, more than half of the participants expressed a desire to continue attending workshops in systematic desensitization during the following semester. Moreover, several of those who did, in fact, score well on their exams have since contacted the SEEK office inquiring when the new workshops would resume. When asked by the experimenter why they wanted to continue after having demonstrated they could earn good grades, they responded that the group involvement provided a certain amount of "moral support" which they felt had helped them through their finals, and, as such, encouraged them to continue in treatment because "it worked." While this attitude seems to indicate more of a dependency need than an improved self concept, it

is conceivable that the desire to continue treatment, despite a recent success in conquering test anxiety, represented simply an early skepticism to what they had in the past grown accustomed to believe they could never accomplish. An alternative interpretation is that the sharing experience in group did, in fact, foster a sense of dependency in certain group members which may not have been resolved in the limited period of time allotted for the investigation. Nevertheless, the following implications seem warranted:

1. The findings of the present investigation provide evidence that the scholastic performances of test anxious students can be measurably improved through a test anxiety desensitization tape-administered program. Although the design focused on test grades of students following desensitization rather than the desensitization process itself, the results suggest that important elements which comprise the desensitization process contributed greatly to the academic performances of students in the experimental group during the final examinations period.
2. In respect to the desensitization process, there are implications of a need in future studies for more objective physiological measures such as galvanic skin responses or pulse rates to validate the anxiety responses of students who may not always be accurately in touch with their feelings when such information is required to meet the conditions of broader generali-

zations.

3. The above problem notwithstanding, the results have direct implications for programs designed to promote academic achievement within college settings. Overall these results supported the hypothesis that students at New York City Technical College who participated in workshops using systematic desensitization to alleviate test anxiety would show greater improvement in GPAs than non participating students at the end of the semester. These findings were consistent with previous research which indicated systematic desensitization is an effective treatment to relieve test anxiety.

On the basis of this study it is recommended that:

1. The college incorporate systematic desensitization procedures into the traditional approaches currently being used to facilitate students' progress. Especially among students from ethnic minority or lower socio-economic backgrounds who experience debilitating anxiety in testing situations, it has been documented that this method of treatment can have measurable beneficial effects on scholastic performances, leading to greater student retention. According to the Office of the Registrar (1983), enrollment figures averaged 13,000 students per semester during the Fall and Spring semesters. However, by the end of the academic year approximately 5200 (20%) had left for reasons

related to academic difficulty. Of the 13,000 who enrolled during the Spring, 1983 semester, 2,439 were academically dismissed and 1,705 were placed on academic probation. Most of the dismissals and all of the probationers were assessed as having fallen below the GPA requirements necessary to remain in good academic standing. A large majority of these students were unable to complete their first year of college because of problems with English, reading, writing and mathematics which were not ameliorated by remedial courses. While this highlights the need for a study to determine what percentage failed due to debilitating anxiety in testing situations, the data in this investigation provided evidence that many low achievers with similar problems in these basic skills have been successfully retained through exposure to the treatment prescribed. It is therefore contended that this method of dealing with student development offers at least a partial solution to the institutional objective of student retention. It is further contended that the variety of support services currently made available, i.e., study skills, tutoring, developmental skills, academic advisement, writing and speech, albeit necessary through the learning centers at the college, may prove insufficient to qualify many students to earn their degree unless some means are also made available that will serve to alleviate the recurring problems of test anxiety they experience during critical examination periods. This is not to imply

that all students underachieve for similar reasons. Some students fail due to lack of good study habits, personal or financial problems, wrong curriculum choice, family or social problems, a lack of relatedness to the institution, or simply a lack of encouragement to persist at scholarly work. What is implied here is that for many of these students, learning how to neutralize anxiety feelings which work at variance with their scholastic abilities might make the difference between success or failure. It can be argued that since attendance in college is optional, those attending are strongly motivated. If such is the case, it behooves the college to provide educational experiences which are designed to elicit maximum achievement levels these students may be capable of reaching were it not for their difficulties in performing well on exams. While it is true that with some students the lack of effective skills results in test anxiety, in others the presence of anxiety may interfere with effective test-taking behavior. Knowing that it is possible to overcome anxiety problems might go a long way towards helping students develop the incentive and confidence necessary to effectively pursue attainable career goals while attending college. It is incumbent on teachers and counselors as well as the college administration to address this issue. Considering that traditional support services are purported to alleviate the deficiencies in basic academic skills students bring with them to

college, the results of this research lead to an inevitable conclusion that services should also be available to address the equally serious predicament of students whose anxieties interfere with their test-taking behavior. Some students may have effective study skills already in their repertoire but be inhibited from using them by high levels of anxiety. Such services must of necessity include methods which will enable these students to demonstrate what they have learned during their classroom experiences.

Methods for Implementation

In the department of Student Affairs there are currently 24 counselors whose assignments are to administer a variety of counseling services through the Brooklyn Student Services Center, the Special Services Program and the SEEK program at the college. The Brooklyn Student Services Center is the official counseling center and is open to the 13,000 students enrolled each semester. There are 12 counselors available to provide comprehensive general counseling, including, addressing personal, academic vocational and financial problems students encounter during the course of each academic year. These counselors could be induced to incorporate systematic desensitization techniques into their repertoire of counseling skills and then be assigned on a rotating or individual, volunteer basis to conduct systematic desensitization workshops throughout the various learning centers such as Allied

Health, Technology, Commerce, Science, and Foreign language lab.

The Special Services Program also provides a comprehensive program of services to handicapped students which includes individual and small group tutoring, basic skills development, orientation and study skills groups. The 6 counselors who act as readers, proctors, and interpreters, along with providing special help during registration, could also be taught systematic desensitization techniques and act as group facilitators in test anxiety groups, or indoctrinate students in the program who may not feel comfortable with a group situation, to the dynamics of this process.

In the SEEK program, which is located in a near-by campus and which is staffed with 6 counselors who must service a caseload of approximately 700 freshmen each semester, such training has already proven to be a valuable addition to the counseling services offered to these students. As mentioned earlier, 2 counselors in this program conducted workshops in systematic desensitization which provided the data for the present study. In addition to benefiting students who seek relief from debilitating test anxiety, the counseling staff would also benefit by attaining a higher degree of visibility within the college community through the offering of this service. In keeping with a trend over the recent past, which challenges counselors and other professional

helpers in student personnel work to demonstrate that their work is more than an ancillary service which can be dispensed with when resources are scarce, such a support service enables the counseling staff to become more actively and directly involved in the process of helping to improve the quality of the classroom learning environment. Blocher, Dustin and Dugan (1971) have all proposed proactive role concepts and broad-based delivery systems which include involving counselors and teachers in a "natural partnership" around which mutual consultation and assistance can occur. Desensitization training in the learning centers and other areas such as the Developmental Skills Department and the Writing and Speech Department, both of which have open laboratory programs to assist students in basic skills courses, would make it necessary for the counseling staff and members of the teaching faculty to work closely together to facilitate the process of student referrals and follow up assessments on student progress. Students in academic difficulty or on probation who evidence problems in this area could be referred by teachers to members of the counseling staff who would be available to provide help individually or through group membership.

It is the position of this investigator that students should be introduced to systematic desensitization techniques in the early stages of college attendance. For some students it may be useful to begin by focusing

on straightforward test-taking skills before working with basic skills courses, while in others the reverse may be indicated. At present, entering freshmen students are assigned to developmental courses in basic reading, writing and mathematics if they fail to meet the requirements of a freshmen skills assessment test which is given to help determine proper course selection and placement. What is recommended is that there also be a screening process that would identify students who suffer from test anxiety, possibly at the time the placement tests are given or early during registration, and encourage those students in need of such services to take workshops in systematic desensitization with the same urgency they are pressured into taking developmental courses. This would have the advantage of dealing with a serious college adjustment problem at a critical time in the students' academic career.

At the same time such an approach would also have the potential for increasing retention in the Developmental Skills Department due to the enhanced chances for academic success among students who, despite receiving help with basic skills remediation, are doomed to fail because of test anxiety. Based on the results of this study, the retention efforts of the college should focus on providing an additional support service aimed at alleviating the effects of debilitating anxiety some students bring with them to college. If the college is to fulfill one of its stated

goals which is to offer Developmental Skills courses and tutorial support programs which develop the basic skills and understanding necessary to succeed in career and college transfer programs, it cannot ignore the deficiencies of its high test anxious students. It has been recommended that such students be identified early in the registration or placement testing procedures and urged to participate in workshops offering training in systematic desensitization. This training, which could be provided by the counseling staff under the auspices of the Department of Student Affairs, should be made available through the learning centers at the college in addition to the tutorial and study skills services traditionally being offered each semester. It has been projected that such an arrangement would create the opportunity for counselors to become more proactive in the delivery of educational services to students through the emergence of a natural partnership between teachers and counselors in which both can share mutual concerns and approaches towards dealing effectively with this problem.

The results of this study and its recommendations will be presented to the President of the college and the Dean of Student Affairs. It is expected that this study will be viewed as a valuable resource which offers a practical solution to a serious problem that adversely affects the objectives of student progress and retention at the institution. By accepting the recommendations in

in this study, it is anticipated that the college will be adding a powerful tool towards the accomplishment of its stated mission of providing students in an urban environment with quality education pertinent to their needs. A related expectation includes more academic success for students who are presently overwhelmed with debilitating anxieties when faced with the prospect of having to take a test. This includes students in the overall college community as well as in the areas of developmental skills. Lastly, it is expected that through the sharing of mutual goals which are centered around concern for the growth and achievement of individual students, counselors and teachers will begin to reconcile some of the differences in value commitments which may have separated them in the past, thereby making it possible for each to learn from the others' professional experiences and enhance their chances for success in rendering this important service to classroom learning at the college.

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APPENDIX A
STRIEBY HIERARCHY SCALE

Position of Item	Description of the Hierarchy Item
1	Seeing questions on the exams you know all the answers to and feeling certain you will do very well.
2	Reviewing for the exam one week before the exam and feeling that you know everything you need to know.
3	Knowing that if you fail the exam you will still pass the course since you have done well in the course all semester.
4	Two weeks before you have to take a final exam.
5	Wanting to talk to your professor but being afraid to talk to him about questions you have pertaining to your final exam.
6	Preparing for a 50 question multiple-choice final exam.
7	Studying for your final exam at home.
8	One week before you have to take the final exam.
9	Preparing for a 10 question essay exam where you only have to answer five of the ten questions.
10	Preparing for a 100 item multiple choice exam.
11	Having to review five chapters of your textbook for the exam.
12	Feeling that you know at least 50% of the material on the exam, but being afraid of not remembering specific terms or examples.
13	One day before you have to take the final exam.
14	Sitting down in the room and watching the professor pass out the final exam and wondering what it will really be like.
15	Studying for your final exam in the library.
16	Trying to concentrate while the instructor is walking around the room during the exam.
17	Hearing about someone that you know who studied very hard for the final exam yet still failed it.
18	One hour before you have to take the final exam.
19	Not knowing what to study for your final exam, with disorganized notes that you can't seem to be able to get together in any meaningful fashion.
20	Preparing for the exam knowing you haven't allowed enough time to adequately cover all the material and feeling there is just too much to study in the time you have before the exam.
21	Walking into the room where you have to take the exam.
22	Seeing a number of questions on the exam that you just can't understand.
23	Having to review your entire textbook and notes for the exam.
24	Having 30 minutes left to finish the exam with one hour's work to do and feeling your mind going blank.
25	Knowing that if you fail the exam you will fail the whole course and, thinking as the professor passes out the exam that you probably studied the wrong material for the exam.

READ CAREFULLY

INTRODUCTION: One major reason for poor academic performance is nervousness while studying for and taking examinations. Even the student who prepares thoroughly and knows all the right study skills could do better on tests if anxiety were not a problem.

Workshops are being organized to help students get rid of test anxiety and in so doing get better grades. Please note that this is not a study skills or tutoring program. If you are interested in registering for the workshops, it will be necessary to complete the enclosed forms and return them to J515 or N227A. If you are able to attend all the workshop sessions and practice what you learn at home, then this program can decrease your test anxiety and in so doing raise your grade point average.

REGISTRATION: To start with, put a check next to all of those workshop time slots that coincide with your free time. You will be assigned to one of the workshops which will meet for four weeks.

<u>WORKSHOP</u>	<u>MEETS ON</u>	<u>HOURS</u>
_____ 1	Tuesday	11-12 pm
_____ 2	Wednesday	11-12 pm

**PERSONAL
INFORMATION:**

Print your name _____

Address _____

City and Zip Code _____

Major Department _____

Telephone _____

Have you ever applied for a test anxiety workshop in the past _____ NO

_____ YES. If the answer is yes, please explain what happened:

RETURN MATERIAL: Return this registration form and surveys to either Room J515 or N227A.

The Alpert-Haber Achievement Anxiety Test

47

Please answer all questions below:

NAME _____ SS#: _____

MAJOR DEPARTMENT _____

PART I: For each question, circle the one answer, i. e., number that is most correct for you.

1. Nervousness while taking an exam or test hinders me from doing well:

- | | |
|------------------|--------------------|
| 1. not at all | 4. usually it does |
| 2. usually not | 5. it always does |
| 3. sometimes not | |

2. I work most effectively under pressure as when the task is very important.

- | | |
|---------------------|-----------------|
| 1. never true | 4. usually true |
| 2. usually not true | 5. always true |
| 3. sometimes true | |

3. In a course where I've been doing poorly, my fear of a bad grade cuts down my efficiency.

- | | |
|----------------|---------------------------|
| 1. never | 4. usually doesn't happen |
| 2. usually not | 5. always |
| 3. sometimes | |

4. When I am poorly prepared for an exam, I get upset and do less well than even my restricted knowledge should allow.

- | | |
|---------------------------|--------------------|
| 1. never happens | 4. usually happens |
| 2. usually doesn't happen | 5. always happens |
| 3. sometimes | |

5. The more important the examination, the less well I seem to do.

- | | |
|---------------------------|------------------------|
| 1. never happens | 4. usually does happen |
| 2. usually doesn't happen | 5. always happens |
| 3. sometimes | |

6. While I may (or may not) be nervous before taking an exam, once I start, I seem to forget to be nervous.

1. I am always nervous during an exam.
2. I am usually nervous during an exam.
3. I am sometimes nervous during an exam.
4. I usually forget my nervousness during an exam.

7. During exams or tests, I block on questions to which I know the answers.
1. I never block on questions I have answers to
 2. usually don't block
 3. sometimes
 4. usually do block
 5. always block
8. Nervousness while taking a test helps me do better.
1. nervousness never helps
 2. nervousness usually doesn't help
 3. sometimes helps
 4. nervousness usually helps
 5. nervousness always helps
9. When I start a test, nothing is able to distract me.
1. this is never true of me
 2. usually not true of me
 3. sometimes
 4. It's usually true of me
 5. This is always true of me
10. In courses in which the total grade is based mainly on one exam, I seem to do better than other people.
1. never true
 2. usually not true
 3. sometimes
 4. usually true
 5. almost always true
11. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.
1. I never blank out
 2. I usually don't blank out
 3. I sometimes blank out
 4. I usually blank out
 5. I always blank out
12. I look forward to exams.
1. I never look forward to exams
 2. not usually
 3. sometimes
 4. I usually look forward to exams
 5. always look forward
13. I am so tired from worrying about an exam that I find I almost don't care how well I do by the time I start the test.
1. I never feel this way
 2. I usually don't feel this way
 3. I sometimes feel this way
 4. I usually do feel this way
 5. I always feel this way

14. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.
1. time pressure never seems to make me do worse on an exam than others
 2. usually not
 3. sometimes
 4. usually
 5. the pressure always seems to make me do worse than others
15. Although "cramming" under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam, even under pressure, and successfully retain it to use on the exam.
1. never can use crammed material
 2. usually not use crammed material
 3. sometimes use it
 4. I can usually use it
 5. I am always able to use "crammed" material on an exam
16. I enjoy taking a difficult exam more than an easy one.
1. never enjoy it
 2. usually don't enjoy it
 3. sometimes
 4. usually enjoy it
 5. Always enjoy it
17. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.
1. never happens
 2. usually doesn't happen
 3. sometimes happens
 4. usually does happen
 5. always happens
18. The more important the exam or test the better I seem to do.
1. never true of me
 2. usually not true of me
 3. sometimes true
 4. this is usually true of me
 5. this is always true of me
19. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.
1. never happens to me
 2. doesn't usually happen
 3. sometimes happens
 4. usually does happen
 5. always happens to me

INSTRUCTIONS FOR PRACTICING RELAXATION

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You should be lying down on a comfortable sofa or bed with a small pillow under your head. Your legs should be extended and your arms resting at your side. No part of your body should require the use of muscles for support. Close your eyes. The room should be quiet and lights dimmed if possible. Read the following instructions completely before you attempt to do any of the relaxation exercises.

1) Make a fist with your dominant or preferred hand (usually the right). Make a fist and tense the muscles of your (right) hand and forearm; tense until it trembles. Feel the muscles pull across your fingers and the lower part of your forearm. Hold this position for 5 to 7 seconds, then relax. Just let your hand go. Pay attention to the muscles of your (right) hand and forearm as they relax. Note how those muscles feel as relaxation flows through them. Rest for a few seconds.

Again, tense the muscles of your (right) hand and forearm. Pay attention to the muscles involved. Maintain the tension for 5 - 7 seconds. Now relax; attend only to those muscles, and note how they feel as the relaxation takes place, becoming more and more relaxed, more relaxed than ever before. Each time you do this you'll relax even more until your arm and hand are completely relaxed with no tension at all. Your forearm will just feel warm and relaxed.

Continue this exercise until your (right) hand and forearm are completely relaxed with no tension (usually 2 - 4 times is sufficient.)

2) Now tense your right biceps, (the muscle in the upper arm) the way kids show off their muscles. Proceed in the same manner as above using the (right) hand and forearm as a reference point. That is, continue the exercise

until your biceps feel as completely relaxed as your hand and forearm. Now proceed to other muscle groups in the order they are listed below. Do the exercise in the same manner, first tensing the muscle group and then relaxing it. Note how these muscles feel as they relax; feel the relaxation and warmth flow through these muscles; pay attention to these muscles so that later you can relax them again; always use the preceding muscle group as a reference for moving on. Do not move on to the next muscle group until the one you are on now is fully relaxed, as relaxed as its predecessor.

3) Nondominant (left) hand and forearm; be sure to feel the muscles over your knuckles and on the lower part of your arm.

4) Nondominant (left) biceps.

5) Frown hard, tensing the muscles of your forehead and the top of your head and then relaxing them (these muscles often "tingle" as they relax.)

6) Wrinkle your nose, feeling the muscles across the top of your cheeks and upper lip, and then relax them.

7) Draw the corners of your mouth back, feeling your jaw muscles and cheeks, and then relax them.

8) Tighten your chin and throat muscles, feeling the two muscles in front of your throat, and then relax them; tighten the muscles in the back of your neck.

9) Lift your two arms over your head as if you were going to tighten your biceps, push your head against the pillow and tighten the muscles in the back of your neck (you should feel a lot of tension release in the back of your neck) now relax your neck.

10) Tighten your chest muscles and the muscles across your back - feel these muscles pull below shoulder blades, and then relax them. If you have

trouble with this one, try holding your shoulders forward toward your chest. That will give you the proper feeling of tension.

11) Tighten your abdominal muscles - make your abdomen hard and then relax it.

12) Tighten the muscles of your right upper leg - feel the one muscle on top and the two on the bottom of your upper leg and then relax them.

13) Push down with your toes and arch your right foot - feel the pressure as if something were pushing up under the arch and then relax. Follow the procedure for the right leg with

14) Your left upper leg - tense and relax

15) Your left calf - tense and relax

16) Your left foot - tense and relax

17) Tense your muscles in the small of your back - arch your back away from the bed. Feel these muscles and then relax them.

18) Tighten the muscles in your buttocks and anus. Feel the tightness and then relax it.

19) Tighten the muscles which hold back your urine. Tighten them as much as possible and then relax them.

Your entire body would now be in a state of total relaxation. With practice you should be able to achieve this relaxed state rapidly and at will without having to go through the total cycle of tensions and relaxings. For most muscle groups, two tensing and relaxing cycles should suffice for good relaxation. If you feel any tension anywhere in your body, go back and repeat the tensing-relaxing cycle for the muscle group. It is often helpful to take a deep breath and hold it while tensing your muscles, and to let it go while relaxing. Should any muscle group not respond after four trials, move on and return to it later.

CAUTION: Some people may develop muscle cramps or spasms from prolonged tension muscles. If this occurs, shorten the tension by a few seconds, and do not tense your muscles quite so hard.

Progressive relaxation, properly executed, seems to resemble a light hypnotic-trance state. Some people actually report sensations of disassociation from their bodies. This is complete relaxation and is to be expected. You should speak as little as possible while under relaxation, and try to practice in a situation free from interruption.

You should practice relaxation twice a day between sessions. Do not work at it more than 15 minutes at a time, and not more than twice within any three-hour period. You will find that complete bodily relaxation, while slow at first gets progressively more rapid and easy to do. You should practice alone. Relaxation may be used to get to sleep if practiced while horizontal; if you do not wish to sleep, you should practice sitting up. Properly timed, relaxation can be used for a "second wind" during study.